

Agricultural Administration Under the Patent Office, 1836-1862

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"I...hasten to reply: That, in the discharge of official duties, I could not fail to notice facts deeply connected with the subject of agriculture, and so far as I was able, without the neglect of primary obligations, to give all the adventitious aid in my power to this important branch of national industry"—Henry Ellsworth, first Commissioner of Patents (1838 Report).

Back in the middle third of the nineteenth century, agriculture loomed larger in the United States than its counterpart industries of commerce and manufacturing, and many persons considered it the backbone of industry. But as far as governmental promotion and administration were concerned during the years from 1836 to 1862, agriculture—regardless of its importance to the nation's economy—rated only divisional status within the United States Patent Office. From 1836 to 1849, when the Patent Office was under the jurisdiction of the Department of State, agriculture was given a quasi-divisional status by the Commissioners of Patents; however, with the transfer of the Patent Office to the newly created Department of the Interior in 1849, official recognition was given at that time to the Agricultural Division.

Even though Congress did not feel that agriculture deserved departmental status, it was far from being neglected during this first twenty-six-year period of governmental administration as all of the early Commissioners of Patents firmly believed that agriculture constituted an important base of national wealth. As

a consequence agricultural assistance and promotional programs—so familiar today—had their geneses. It was only a matter of time before the expanding agricultural activities and services of the Patent Office merited the creation of a separate department with a commissioner in 1862. Full cabinet status came in 1889. In short, it can be contended that the foundations for the present-day Department of Agriculture were laid during the years when agricultural administration was under the anomalous direction of the United States Patent Office.

Prior to the year 1836 there really was no provision for any such activity on the part of the federal government. Interestingly enough, the Department of Agriculture as we know it today was born out of a need for better supervision of patents, a problem that Congress had wrestled with ever since 1790, usually handling it through an incongruous committee method. Without going into an extended treatment of the matter, suffice it to say that Congress by the Act of 4 July 1836, finally systematized the patent procedures by establishing the Patent Office within the Department of State. The act established the examination system of granting patents. 1 About five hundred patents were being granted yearly during the late 1830s, and one-fifth of those were listed as Agricultural Inventions: another one-fifth were also connected with agriculture in some way, for example, milling equipment and machines that processed farm products. Thus, although many of the patents at that time dealt with agricultural-related inventions, the act establishing the Patent Office could not be interpreted in any sense of the word as a mandate for the promotion of agriculture. Yet, in effect, it amounted to that as the first Commissioner of Patents, Henry L. Ellsworth, who held the position for nearly ten years, established precedents in agricultural administration that were followed faithfully and expanded upon by succeeding commissioners.

Ellsworth (1791-1858), 2 a lawyer from Hartford,

^{1.} U.S., Statutes at Large, vol. 5, 357, pp. 117-25. See Gladys L. Baker et al., Century of Service (Washington, D.C.: Government Printing Office, 1963), pp. 1-12, for additional treatment of the early years of agricultural administration prior to 1862.

^{2.} Allen Johnson and Dumas Malone, eds., Dictionary of American Biography, 22 vols. (New York: Charles Scribner's Sons, 1931), 6:110-11.

Connecticut, and from a prominent family, also speculated in land and was an ardent promoter of agriculture and settlement of the West. The latter interest was probably an outgrowth of the fact that he had acquired large holdings of land from the government in Tippecanoe County, Indiana. From the very beginning he had taken an interest in agricultural promotion; for example, he served as secretary of the Hartford County Agricultural Society in 1818. He was also quite prominent in business and civic affairs and was subsequently asked by President Andrew Jackson to serve in various administrative capacities for the government. It was through President Jackson that Ellsworth was appointed Commissioner of Patents.

Because of his agricultural promotions while serving as Commissioner of Patents, Ellsworth is rightfully referred to as the father of the Department of Agriculture.³ He immediately made known his philosophy concerning the Patent Office and its relationship to agriculture in his first annual *Report of the Commissioner of Patents* (1837) ⁴ issued 1 January 1838, by which time he had already taken it upon himself to implement some of the ideas.

Of late, however, inventors have directed their attention, with peculiar interest, to the improvement of the implements of agriculture,. . Implements of this kind will all be collected and exhibited at the Patent Office, and, from the report of thousands to the seat of Government during the session of Congress, a knowledge of their use and practical application will be extended over the whole country. A subject intimately connected with this is the aid which husbandry might derive from the establishment of

^{3.} Ibid. After resigning from the Patent Office, Ellsworth became a land agent in Indiana and one of the greatest agricultural promoters in the early West, advocating the use of machinery to improve and expand farming operations—an idea that seemed rather visionary at the time.

^{4.} The principal source for this article is the Report of the Commissioner of Patents for the years 1837-1861. In 1849 a separate volume of the Report was devoted solely to Agriculture, while other volumes dealt with Arts and Manufactures. By the last half of the 1850s over two hundred thousand copies of the Agricultural Report (shortened form of the title used by the Patent Office when referring to this part of the Report of the Commissioner of Patents) were printed annually. Judging from the large printing, the size of the Report, and the condensed correspondence from readers, which was included in each annual edition and often covered one hundred pages, the suggestions and writings of the Patent Office had a significant effect on the agriculturists of that era.

a regular system for the selection and distribution of grain and seeds of the choicest varieties for agricultural purposes.

For commerce and manufacturers, much has been done; for agriculture, the parent of both, and the ultimate dependence of the nation, much remains to be done. Husbandry seems to be viewed as a natural blessing, that needs no aid from legislation....

This subject has been forced on the attention of the undersigned by those who are engaged in improving our implements of husbandry. The Patent Office is crowded with men of enterprise, who, when they bring the models of their improvements in such implements, are eager to communicate a knowledge of every other kind of improvement in agriculture, and especially new and valuable varieties of seeds and plants. Hence, the undersigned has been led to receive and distribute, during the last two years, many articles of this kind which have been committed to his care; and experience has induced him to believe that there is no spot in the Union so favorable to this object as the seat of Government. ⁵

The suggestion for the collection of agricultural statistics and the collection and distribution of seeds and plants aroused the interest of the chairman of the House Committee on Patents, Isaac Fletcher of Vermont, who requested information on that subject on 21 January 1839. Ellsworth replied with a convincing letter the following day in which he lauded the possibilities of such a system⁶ and once again called for greater promotion of agriculture.

The Commissioner of Patents would cheerfully, if desired, collect, as far as possible, agricultural statistics from different sections of the United States, and present the same to Congress, with his annual report. Such statistics might be useful to the Government in their financial estimates, and certainly would be useful to the citizens generally.

From the Patent Office, allow me to say, much encouragement, it is believed, can be given to agriculture without a neglect of present duties.

I cannot omit to notice that the efforts of Government to

5. U.S., Department of State, Report of the Commissioner of Patents, 1837, pp. 4-5 (hereafter cited as [year] Report). Italics are mine.

6. 1838 Report, pp. 57-59. Ellsworth was already doing some of the activities that he spoke of at his own expense as well as distributing seeds and plants through some of the congressmen. He believed that "an increase, by better selection of seeds, only ten per cent., must secure a gain upwards of twenty millions of dollars each year."

obtain, through her navy, foreign seeds and plants, have failed, from the inability of collectors in the different ports to distribute the objects transmitted, until some depot shall be established to receive, classify, and disseminate the generous contributions daily offered. The new Patent Office building will afford room for the reception and exhibition of seeds, and a small requisition on the patent fund (expressly constituted to promote the arts, and which cannot be diverted without special legislation) will enable the Commissioner to find a remuneration from expenses already becoming onerous to himself. ⁷

Collection of agricultural statistics was already being done on the state level, particularly in Massachusetts. And other nations, Ellsworth had stated, considered the collection of agricultural statistics as most important "in providing for the public wants, guarding against speculation, and as a means of estimating the probable state of exchange, so far as it is affected by a surplus or scarcity of crops."

Congress responded to these urgings by passing a modest appropriation of \$1,000 on 3 March 1839, "to be expended by the Commissioner of Patents in the collection of agricultural statistics, and for other agricultural purposes; for which the said Commissioner shall account in his next annual report." This small appropriation is now generally considered the embryonic element in the evolution of the Department of Agriculture. Another \$1,000 appropriation was made in 1842, and the amount was gradually increased each year thereafter as the agricultural activities of the Patent Office expanded. For example, seven years after the first appropriation for the collection of agricultural statistics, the Patent Office staff was gathering over five thousand newspapers, letters, and journals for information and statistics to make up the agricultural portion of the *Report*. 10

The appropriations for agricultural purposes were questioned periodically by some members of Congress as to practicality and constitutionality. In the 1845 Report Commissioner Edmund Burke, who had replaced Ellsworth and was making his first report, stated that since "millions" were

^{7.} Ibid., pp. 58-59.

^{8.} Ibid., p. 58.

^{9.} U.S., Statutes at Large, vol. 5, 88, pp. 353-55.

^{10. 1846} Report, p. 9.

Figure 1

COMMISSIONERS OF PATENTS, SECRETARIES OF THE INTERIOR, AND SUPERINTENDENTS OF THE AGRICULTURAL DIVISION, 1836-1862

Commissioners of Patents*

Henry Ellsworth	1836-1845
Edmund Burke	1845-1849
Thomas Ewbank	1849-1852
Silas Hodges	1852-1853
Charles Mason	1853-1857
Joseph Holt	1857-1859
William Bishop	1859-1860
Phillip Thomas	1860
David P. Holloway	1861-1865

Secretaries of the Interior

Thomas Ewing	1849-1850
James A. Pearce	1850
Thomas McKennan	1850
Alexander Stuart	1850-1853
Robert McClelland	1853-1857
Jacob Thompson	1857-1861
Caleb Smith	1861-1863

Superintendents of the Agricultural Division**

Daniel Lee	1849-1853
Daniel J. Browne	1853-1859
Thomas Clemson	1859-1861
Erie Locke***	1861
Isaac Newton****	1861-1862

^{*}Under the supervision of the Department of State from 1836 to 1849. See *The Story of the United States Patent Office* (published by the Pharmaceutical Manufacturers Association with the cooperation of the U.S. Department of Commerce, 1965) for a list of Commissioners of Patents and a brief resume of their administrations.

^{**}Lee and Browne were titled Agricultural Clerks, but Browne was sometimes referred to as the Superintendent of the Agricultural Division.

^{***}Vivian Wiser, "Erie Locke: A Forgotten Superintendent of Agriculture," Agricultural History, 41 (Oct. 1967): 405-6.

^{****} Appointed first Commissioner of Agriculture in 1862.

devoted to the protection of manufactures, commerce, and other interests, surely it would not seem unreasonable if a "few thousands" were appropriated for the "promotion and advancement of that greatest and most essential of all interests of the country-the agricultural." Burke, lawyer, editor, former congressman from New Hampshire, and friend of agriculture, capably replied in the 1846 Report to charges that "the agricultural duties had been assumed without authority of law." He reminded readers that Congress during the 1839 session (in which he had participated) had provided for that expenditure in a "liberal enlightened spirit," and he was irked that Congress had made no appropriation in 1846 for the collection of agricultural statistics. 12 The appropriation was restored the following year. Burke, who had a great gift of phraseology, put forth the following philosophy in the 1847 Report, which sounded much like the views of his immediate predecessor, Henry L. Ellsworth, and probably silenced some of the critics for the time being.

Truly may agriculture be called the mother of the arts, the most honorable and the most prolific of good to the world, to which all other arts pay grateful association. May agriculture be ever cherished by the American citizen as the interest of his country greatest in honor, dignity, and importance, and constituting the very foundation of its independence, wealth and power.¹³

The question of constitutionality of the agricultural appropriation was raised at later intervals, too, but the Commissioners of Patents easily refuted the arguments. For example, in 1856 Commissioner Charles Mason, a jurist and former chief justice of Iowa Territory, ably defended the agricultural appropriation by pointing out that it was just as lawful as the millions expended for the encouragement and security of commerce. He specifically cited such favorable governmental practices for commerce as expenditures for navigation and the tariff for manufacturing. Mason said that he was not questioning the legitimacy of these practices, but only wanted to show that the favor could be extended to other

^{11. 1845} Report, pp. 15-16.

^{12. 1846} Report, p. 11.

^{13. 1847} Report, p. 14. Later in life (1871), Burke also served on the New Hampshire Board of Agriculture.

pursuits as well. For him, it seemed "manifestly just and proper that commerce, manufacturing, and agriculture—the three great branches of national industry and wealth—should be regarded with equal favor by Congress." Certainly, the Patent Office was not slighting the areas of commerce and manufacturing; moreover, the complete *Report of the Commissioner of Patents* for 1857 consisted of three volumes for Arts and Manufacturers and only one volume for Agriculture. After this able defense by Mason of the agricultural appropriation, critics began concentrating their attacks against certain parts of the agricultural program instead—especially the distribution of seeds and cuttings.

A whole new dimension had been given to the agricultural duties of the Patent Office in 1849 when the latter was transferred to the new Department of Interior, 15 a much more favorable atmosphere for the promotion of agriculture especially since Thomas Ewing, the new secretary of the Interior felt that "the agricultural interest stands first in importance in our country, and embodies within itself the principal elements of our national wealth and power." In making his first Report of the Secretary of the Interior, Ewing put in a strong word for the work of the Agricultural Division of the Patent Office and called the aid given by the government as "wholly inadequate." He felt that agriculture deserved to be "a leading object of public care and patronage." A first important step, he claimed, would be to create a full-fledged Agricultural Bureau within the Department of Interior but independent of the Patent Office.17

An effort was made in 1850 to follow up on the bureau idea as some state legislatures sent resolutions to Congress favoring such a move. A bill to establish an agricultural bureau was reported out by the Senate Committee on Agriculture, ¹⁸ but it

^{14.} Charles Mason, Commissioner, "Preliminary Remarks," 1856 Report, pp. xiv-xv.

^{15.} U.S., Statutes at Large, vol. 9, 107, pp. 395-97.

^{16.} U.S., Congress, House, Report of the Secretary of the Interior, H. Exec. Doc. 5, 31st Cong., 1st sess., 1849-50, 3, pt. 2:5.

^{17.} Ibid., pp. 5-6.

^{18.} U.S., Congress, Senate, Congressional Globe, 31st Cong., 1st sess., 1849-50, 22, pp. 119, 769.

later failed to be adopted. Regardless, the Agricultural Division at least had gained official recognition within the Patent Office: and upon the suggestion of the new secretary of the Interior, a "practical and scientific agriculturist" was appointed to superintend the "collating and arranging of materials" for the annual report, 19 which was issued thereafter as a separate volume by the Commissioner of Patents. The Agricultural Report, as this volume was commonly called, contained around five hundred pages of information, statistics, articles, and correspondence in reply to circulars sent out by the Patent Office. Also, the collection of seeds and plants was expanded in 80,000 packages, being distributed through congressmen and interested subscribers; by 1861 this activity had swelled to 2,474,380 parcels annually. Appropriations for the Agricultural Division were also increased during this period, so that by 1860 they were averaging over \$50,000 per year 20 -a significant increase from the \$1,000 appropriation twenty years earlier in 1839.

As is obvious from the increased appropriations, a marked expansion of the Agricultural Division staff had also taken place during the 1850s. Much of this was accomplished during the tenures of Charles Mason as Commissioner of Patents (1853-57) and Daniel J. Browne as Superintendent of the Agricultural Division (1853-59). Together they planned and prosecuted an expanded agricultural program—often drawing as much criticism as praise—that began to put the United States at par with the other leading nations in relation to the promotion of agriculture. The division, instead of relying on published sources and correspondence for much of its information, began doing its own field work. Agents were sent to Europe and China to study crop adaptation and agricultural methods, with Browne himself doing much of the traveling and reporting; an entomologist did field work in the South on cotton and oranges; two chemists were employed for chemical analysis of

^{19.} Thomas Ewbank, Commissioner, 1849 Report, p. 5. Daniel Lee, an M.D., was responsible for gathering the information for the first Agricultural Report; so in effect he was the first superintendent of the Agricultural Division, although he was probably considered an agricultural clerk at the time.

^{20. 1849} Report, p. 12; 1861 Report, p. 1; and 1860 Report, p. 11.



Advertising alfalfa seed in Pierre, South Dakota

plants, soils, and fertilizers; a propagating garden with attendants was established in Washington, D.C., for experimental purposes; and the Agricultural Division office staff itself grew to include the superintendent and four clerks. ²¹

As a consequence of the expanded efforts of the Agricultural Division, Commissioner Mason is given credit for having helped lay the foundation for the Department of Agriculture. But history has not been as kind to Superintendent Browne, who was responsible for the work and against whom the critics directed their attacks. Browne, an editor of the American Agriculturist before coming to the Patent Office, was genuinely interested in the advancement of agriculture; but his seed and plant distribution program so irritated the seed business companies that he was finally relieved of his duties in 1859—even though the House Committee on Agriculture in an investigation the previous year had found him fully qualified.

Browne saw great potential in the seeds and cuttings program and defended it to the end. When his activities on behalf of agriculture are assessed, it would seem that Browne, too, deserves a large niche in the evolution of the Department of Agriculture.²²

Because of the criticism of Browne and the activities of the Agricultural Division, Secretary of the Interior Jacob Thompson, in January 1859, created an Advisory Board of Agriculture to the Patent Office to evaluate the agricultural program. The board generally agreed with the operation and made the following additional recommendations, which give a good indication of the broadened activities of the Agricultural Division:

 encouragement of scientific and practical education in agriculture, in the establishment of colleges and schools;

2) increased appropriations by Congress;

- continuation of meteorological study in conjunction with the Smithsonian Institution;
- continuation of experiments on the introduction of the tea plant and extension of the cultivation of the vine;
- 5) illustrations in the *Agricultural Report* should be strictly accurate, and colored if essential;

6) results of the work of the Patent Office were satisfactory:

7) expressed the opinion that the introduction of trees, plants, cuttings, etc., by government, has been attended by benefits to the people greater than the expenses incurred.²³

Thus, the advisory board not only sanctioned what Browne had been doing, but even wanted an expanded agricultural program—a sign of things to come.

There was an Acting Commissioner of Patents at the time of the 1860 Report, so Superintendent of Agricultural Affairs Thomas G. Clemson gave the Preliminary Remarks. Clemson, a true believer in the diffusion of knowledge as well as agricultural education, had helped found the Maryland Agricultural College in 1856 and, later in life, organized the idea for Clemson College. He took advantage of this opportunity and called for the establishment of a new Department of

^{22.} Johnson and Malone, eds., American Biography, 3:164-65; 1855 Report, p. x; and a pamphlet issued in 1858 entitled Vindication of the Agricultural Division of the Patent Office.

^{23.} As summarized from J. Holt, Commissioner, "Preliminary Remarks," 1858 Report, p. iv.

Agriculture, citing the growth of the activities of the Agricultural Division and the fact that many of the leading agricultural countries of Europe had already established such departments. Clemson also thought that public land administration properly belonged under the Department of Agriculture, if and when the latter was established.²⁴

The new Commissioner of Patents, D.P. Holloway, in the 1861 Report (issued 30 January 1862) stated that he planned to submit a resolution to Congress calling for a new Department of Industry with three bureaus-agriculture, commerce, and mechanics. Each bureau would be headed by a commissioner. 25 On 15 May 1862, however, under pressure from its own constituency, 26 Congress established a separate Department of Agriculture with expanded powers and duties to be headed by a commissioner. 27 Isaac Newton, whom President Abraham Lincoln had appointed as Superintendent of the Agricultural Division in 1861, was elevated to the new Commissioner of Agriculture post. Newton had been active in the Pennsylvania State Agricultural Society and the United States Agricultural Society and had previously urged Congress to establish a Department of Agriculture. The die had now been cast, and Newton set about expanding all areas, many of them later becoming bureaus. 28 This growing department finally gained full executive status in the president's cabinet in 1889.

Between 1837 and 1861 the Agricultural Division published numerous articles and suggestions that dealt with general farming methods, utilization of the land, and land

^{24. 1860} Report, pp. 5-12.

^{25. 1861} Report, pp. 5-6.

^{26.} By 1858 the Patent Office already had on record a list of 912 boards and societies that promoted agriculture (1858 *Report*, pp. 90-91).

^{27.} U.S., Statutes at Large, vol. 12, 72, pp. 387-88. The law stipulated that the new Department of Agriculture should have "the general designs and duties of which shall be to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of the word, and to provide, propagate, and distribute among the people new and valuable seeds and plants." The old Agricultural Division of the Patent Office had been pursuing these same objectives for about a dozen years, only now it would be done on a much larger scale.

^{28.} Johnson and Malone, eds., American Biography, 13:472-73.

improvement.²⁹ The farmer of this era was more concerned with drainage than irrigation since moisture was generally sufficient east of the Mississippi River; consequently, the *Report* contained many articles on ditching and tilling of wetlands. The Swampland Acts of 1850 and succeeding years might have prompted some of this interest. The division searched for any methods that pertained to this problem and on one occasion even suggested the building of polders.³⁰

Another problem in land utilization and improvement was the use of fertilizers and manures. Each annual *Report* had a section on the proper use of guano, animal manures, and mineral

29. The items in the Report at times were extremely interesting, informative, and perceptive; at other times, the articles and suggestions were rather amusing exercises in futility. Whatever the case, it was widely read by farmers in order to follow new developments. The Report usually began with some Preliminary Remarks by the Commissioner of Patents and/or the Superintendent of the Agricultural Division, who summarized the major developments in agriculture during the past year and listed some of the activities of the Agricultural Division. Next, articles on the major crops and livestock, sometimes written by the staff, but mainly excerpts of other agricultural publications from the United States and Europe, gave numerous suggestions for improvement (a common practice was to collect numerous other publications and then condense all the information into a single article, such as D.A. Wells, "Notes on the Recent Progress of Agricultural Science," 1860 Report, pp. 79-134, and 1861 Report, pp. 314-34). Unfortunately, many of these articles are untitled and unsigned, so documentation had to be limited to the year of the Report and the pages. The next section of articles dealt with land use and agricultural methods; for example, drainage, fertilizers and manures, fencing, and irrigation. Then came the correspondence section, consisting of letters from farmers, local agricultural societies, and interested persons from nearly every state and territory of the United States. They told of their accomplishments and problems and usually offered suggestions for improvement of agriculture. Frequently, they reported on experiments with seeds and plants obtained from the Patent Office, O.H. Kelley, corresponding secretary of the Northwood Farmers' Club of Wright County, Minnesota, wrote that "the distribution of seeds, received from the Patent Office the past season, has resulted in the formation of one of the most efficient organizations of farmers of which our new State can boast" (1859 Report, p. 564), O.B. Nichols, corresponding secretary of Clinton County Agricultural and Mechanical Association of Carlyle, Illinois, stated that "the law of Congress for the collection and distribution of seeds should immortalize the names of every member who voted for it" (1859 Report, p. 567). Also included in the corresponding section were numerous letters from United States consuls and officials in foreign lands who listed crops and plants as well as animals that might thrive in America. Finally, near the end of the volume was a list of agricultural inventions patented during the year. The Agricultural Report was much like a yearly encyclopedia and/or almanac on agriculture.

30. See D.J. Browne, "On the Drainage of Haarlem Lake [Netherlands], With Suggestions On Its Applicability to Overflowed Land in the United States," 1855

Report, pp. 122-28.

fertilizers like lime, phosphates, potashes, and ground bone. Some articles even suggested the use of fecal matter from the cities, which in addition to enriching the soil would solve the sanitation problem at the same time. 31 Another article advanced the idea of increasing the fertility of land through the use of electricity; after some brief testing, however, the idea apparently was discarded. 32 Deep plowing, too, was suggested as a means of simproving the soil because "by bringing up the subsoil, the very constituents which are deficient in the upper, may thus be supplied, or the excess in that may be neutralized" and deep-rooted plants would also thrive as a result. 33 Another farmer astutely suggested in the 1852 Report that by plowing down a heavy crop of clover and rotating the crops thereafter, the land would become more productive. Others felt that the worn-out tobacco and cotton lands of Virginia and North Carolina could be improved through the use of peas and clover. 34 In general, many of the farming methods were becoming quite sound as farmers were now learning to properly diagnose the nature of the fertility of the soil.

Fencing was always a problem for the farmer in the prebarbed wire days, especially since he was beginning to encounter treeless prairies. Suggestions here were multiple, but it usually involved "live" fences, i.e., hedges. The Osage Orange hedge received the greatest attention, but one article actually listed over twenty types of hedges worth consideration. 35 Another common suggestion was the ditch-and-embankment method, which needed only a low fence of some sort.36 One generation later, however, most of these fencing problems were

solved by the invention of barbed wire.

There were other general problems for which the Patent

32. "Increasing the Fertility of Land by Electricity," 1844 Report, pp. 368-70;

1845 Report, p. 354.

33. 1844 Report, p. 151.

34. 1852 Report, p. 48; 1849 Report, pp. 400-402.

36. 1842 Report, pp. 44-45; 1844 Report, pp. 455-57.

^{31.} See "Disinfection of Fecal Matter-Its Cheap and Immediate Conversion into Manure," 1844 Report. pp. 382-84; D.J. Browne, "On the Purification of Cities and Towns; the Deodorization of Their Fecal Matter; and Its Removal and Conversion into Manure," 1855 Report, pp. 129-42; and Charles T. Jackson, "Deodorization of Vaults and the Conversion of Night-Soil into Manure," 1856 Report, pp. 198-200.

^{35.} John Torrey, "Notice of Several Indigenous Plants Suitable for Hedges," 1857 Report, p. 239-43.

Office offered some possible solutions. For example, cottages built from clay bricks would solve the problem of housing in areas where timber was scarce. Commissioner Ellsworth even constructed one of these cottages "in full sight of the Capitol." In a sense this type of structure presaged the sod house of the Plains area. For the problem of transportation, suggestions ranged from plank roads and wooden railroads to a prairie car, which was patented in 1845 and received the plaudits of Commissioner Burke. This vehicle would travel the prairie, it was hoped, where railroads were not feasible. ³⁸ In the late 1850s, some steam wagons were tried on the prairies of the West, but often experienced mechanical difficulty.

Beginning about 1850 agricultural education became a major topic of discussion in the *Report*. The emphasis was on college training, but it was also thought that elementary and practical schools should have some training in agriculture. Superintendent D.J. Browne even designed a study unit for elementary schools.³⁹ The Advisory Board of Agriculture to the Patent Office had recommended "scientific and practical education in agriculture" and the establishment of agricultural schools and colleges. Some states had taken the lead by founding agricultural colleges on their own. The whole aspect of agricultural education was finally culminated in the Morrill Act of 1862.

An interesting article on "Lunar Influences" by D.J. Browne was included in the 1857 Report. It was not known exactly what effect the moon had on nature and crops, but just in case someone wanted to check out the relationship between lunar influences and certain natural phenomena, a table of moon ages for the years 1776 to 1889 had been attached. 40 The Agricultural Division was also working in cooperation with the

^{37. 1842} Report, pp. 45-46, 98-101; 1843 Report, p. 6; 1844 Report, pp. 450-54. Ellsworth's efforts here were probably related to his then-growing interest in land speculation in the Indiana country, thus hoping to make the land more attractive to settlers.

^{38, 1845} Report, pp. 74-75. Burke called the prairie car the "most striking improvement" patented within the year.

^{39.} D.J. Browne, "Elementary and Practical Education, Considered in Connection with the Primary and Agricultural Schools in the United States," 1858 Report, pp. 1-14.

^{40.} D.J. Browne, "Lunar Influences," 1857 Report, pp. 550-51.

Smithsonian Institution in gathering meterological information that would be "an important aid in determining the adaptation of the soil and climate to particular products." ⁴¹ This cooperative effort resulted in the construction of several revealing physical and precipitation maps of the United States; for example, a map prefixed to the 1858 Report, showed the regions that would have to be irrigated in order to be cultivable. The eastern boundary of that region closely followed the ninety-eighth meridian, thus predating J.W. Powell's study by nearly twenty years. ⁴²



Irrigating a small fruit nursery near McIntosh, South Dakota

41. J. Holt, Commissioner, "Preliminary Remarks," 1858 Report, p. v.

42. In line with this topic of utilization of western lands, William Gilpin of Independence, Missouri, western adventurer who had traveled with Fremont in 1843 and later became the first territorial governor of Colorado, had written an article for the National Intelligencer entitled "The Agricultural Capabilities of the Great Plains." A condensed version was introduced in the 1857 Report pp. 294-96. Gilpin defined the Great Plains as being west of the western boundary of Louisiana, Arkansas, Missouri, and Iowa over to the Rockies, and stretching from Texas to the Arctic. He stated in the article that "these plains are not 'deserts,' but the opposite, and will in the future add much to the empire of commerce and industry now being erected on this Continent.

An article about Colorado by Edward Bliss was included in the 1861 Report in which he referred to the "Great American Desert" as "mythical" and a "fabulous belief" ("Territory of Colorado: Its Soils-Its Climate-Its Mineral Products and Resources," pp. 154-57). So it appears that although Congress as late as 1855 had approved an appropriation for the experimentation with camels in the West, the

Some of the articles in the *Agricultural Report* show a perception uncommon for that time; others reveal a strain of ideas that had persisted probably for generations. In general, however, one gains an appreciation of the problems that bothered farmers of that period. Often, they found solutions through innovation, experimentation, and communication, which explains in part the popularity of the *Agricultural Report* during these years. Even today farmers must concern themselves with a number of these same problems, especially fertility and irrigation, and they go about solving them in much the same manner, albeit a bit more scientifically than their forefathers of a century earlier.

On the average about one hundred pages in each issue were devoted to the cultivation of major crops such as wheat, corn, oats, hay, and fruits. In addition there were always feature articles on some special new crop, seed, or plant that showed promise or appeared adaptable to the United States. Commissioner Ellsworth had started the practice of collecting seeds and cuttings from all over the world and distributing them throughout the United States. In some cases reciprocal exchange programs had even been established with other countries. Beginning in 1854 a regular feature of the *Report* was a section on "Seeds and Cuttings Recently Introduced in the United States." In 1858 a Propagating Garden was built to serve as an experimental center for some of the new plants, and in a sense was the forerunner of today's agricultural experiment stations.

The attempt to involve the members of the foreign service and navy as well as the diplomatic corps in the crop adaptation program was slow in materializing during the 1840s, but it gained significant momentum during the 1850s. For example, during 1859 letters (and samples) arrived from consuls and ministers to Hawaii, Prussia, Venezuela, Spain, Guatemala, Japan, Ecuador, Russia, Brazil, Cape of Good Hope, Cuba, and

concept of the Great American Desert was slowly being dispelled—in some areas what had once been termed "desert" by early explorers was later called "garden" by promoters and settlers.

^{43. 1858} Report, p. 280; 1859 Report, p. 1.



(Above) Cutting oats in Gregory County, South Dakota and (below) combining rye in Gregory County, South Dakota



the Holy Land. 44 Many times their suggestions were of little avail, but the program as a whole was generally well received because it always seemed to have great potential. Commissioner Ellsworth foresaw a 10 percent improvement or a \$30 million annual increase in the value of agricultural products just through better seeds and plants, 45 and Commissioner Edmund Burke wrote on this topic in the 1846 Report "if one valuable variety of either [grains or vegetables] is introduced from abroad, or disseminated in parts of the Union in which it was not before known, the trifling cost of the operation is a million times repaid, and the cause of agriculture promoted." ⁴⁶

Crops and products that were emphasized as especially worth trying by American farmers were grapes, tea, silk, and hemp. Also, it was hoped that a process could be discovered to produce sugar from cornstalks and oil from colza, rape, and other vegetables; and the Chinese vam might make a suitable substitute for the common potato, which was suffering from some malady or blight during this period. In fact, Chinese productions seemed to receive a good deal of attention in all aspects of agricultural adaptation. 47 Reliable figures were hard to come by on any of the above products, but Commissioner Ellsworth estimated that the United States was importing around \$20 million worth of silk and \$10 million worth of hempen products. 48 The need for sugar and oil was obvious, and the Patent Office also felt that wine and tea could become national drinks if produced in this country. Commissioner Holt suggested to the readers that "the past experience of the world has shown that inebriety, and the attendant evils produced by the use of distilled and factitious liquors, as beverages, disappear in the proportion as pure wine becomes accessible to the people." 49 Tea, the Patent Office thought, would make an

^{44.} The correspondence section in 1859 Report, pp. 535-71.

^{45. 1843} Report, p. 3.

^{46. 1846} Report, p. 11.

^{47.} See S. Well Williams, Canton, China, 1850 Report, pp. 450-53, in which he stresses "the desirableness of introducing into the United States some of the valuable and important production of China."

^{48. 1841} Report, p. 77; 1842 Report, p. 20.

^{49.} J. Holt, "Preliminary Remarks," 1857 Report, p. v.

excellent cash crop for the South in addition to becoming a national drink.

Tea makes an excellent case-in-point for the subject of crop adaptations suggested by the Patent Office. Hundreds of seeds and plants from foreign lands were received and tested, but few received the attention given tea by the Agricultural Division. The promotion of tea by the Patent Office had its beginning around 1849 with the publication of a letter from Junius Smith of Greenville, South Carolina. 50 Smith said that he had been experimenting with tea plants for about a year on his Golden Grove Tea Plantation (which seems to have been the first really concentrated effort by an American agriculturist). He could see no reason why tea would not "flourish" in the southern states, for that country was "filled with natural tea plantations, which are only waiting the hand of the husbandman to be covered with this luxuriant and productive plant." Smith warned, however, that patience was necessary in tea cultivation, which might account for its failure of adoption by American lfarmers.

The 1850 Report ⁵¹ followed this up with an article entitled "Tea Cultivation—Assam, India" by Abbott Lawrence. Reference was made here to its possible introduction into America. Also, another letter from Junius Smith was included in which he again told of his hopes to bring tea cultivation to this country. Smith continued his experiments until his death in 1852, however, the subject did not die with him. It was reintroduced in the 1855 Report by Commissioner Charles Mason who referred to Smith's efforts in the following:

The Tea Plant, ...may be successfully cultivated in favorable situations and under proper management, for local consumption, at least, in most, if not all of our Southern States. This was partially realised from an experiment made at Greenville, in the mountainous part of South Carolina, by the late Junius Smith, in 1848 to 1852....Considering the practical bearing this subject has on the economy and agricultural interests of our Southern States, it is surprising that a simple herb, which has proved of such universal acceptance, ... be restricted in its production almost entirely to the country of its origin. 52

^{50. &}quot;Cultivation of the Tea-Plant in the United States," 1849 Report, pp. 402-4. 51. Pp. 169-94.

^{52.} Charles Mason, "Preliminary Remarks," 1855 Report, p. xlii.

For Mason the major problem was labor and cost of production. He calculated that one southern hand could cultivate six acres of tea against three acres for the Oriental tea hand, based on the point that the former could cultivate six acres of cotton. Thus the problem would be solved, for "the American laborer would perform more than double the amount of work done by the Hindoo, which, undoubtedly, is about the difference in their physical force." ⁵³

Thereafter, tea culture became one of the points of emphasis in the *Report*. It was mentioned again in 1856, and the 1857 issue included a pointed article entitled "On the Practicability of the Tea-Culture in the United States." It began with the following strongly worded argument.

That an article so generally regarded as a prime necessity by every civilized nation should be restricted in its production for centuries almost entirely to the country of its origin, although corresponding regions with respect to soil and climate have been open to its introduction and culture, is an anomaly in the physical and social history of the globe.⁵⁴

The article went on to explicitly cite the area from twenty-seven degrees to thirty-one degrees north latitude as well suited for tea cultivation. In addition an interesting map showing all the areas in the United States that could grow tea was prefixed to the 1857 Report. Again it was argued that the superior laborers, methods, facilities, and transportation of the United States would easily offset the low wages in China. In sum, this article must be considered a classic item in the history of this movement because it contains all the basic arguments for tea cultivation in the United States.

Reference to tea culture continued in subsequent years. One of the reasons given for the building of the Propagating Garden in 1858 was that it would be especially useful for experiments with tea and grapes. During 1860 the Agricultural Division reportedly spent a large proportion of its appropriation for the collection of seeds and plants on tea plants; and a lengthy article on the cultivation of tea as adapted to the United States

^{53.} Ibid.

^{54. 1857} Report, p. 166.

on the basis of practical experience in Assam also appeared in the *Report* for that year. 55

Tea continued to receive much attention from the Department of Agriculture after 1862, but that is beyond the scope of this article. The case-in-point, however, is well made concerning the promotion of seeds and plants by the Agricultural Division of the Patent Office. The same could be done with grapes or a number of common-place crops. Better varieties of wheat, for example, were constantly sought by the division. In short, the program for crop adaptation was an important aspect of the administration of the Patent Office during the years 1836 to 1862. Even though some of the schemes and promotions might have been a bit bizarre or impractical, some worthwhile research was also accomplished through this practice. As D.J. Browne, Superintendent of the Agricultural Division, stated in reporting to the Commissioner of Patents in 1855 and in answer to critics of the program,

the benefits which have resulted to the country, and those yet in the progress of development, from the introduction or distribution of useful seeds, plants, and cuttings, obtained from distant parts of the globe as well as from different regions of this country, have been such as to call forth the expressed gratification and general approval of the agricultural portion of the community in all sections of the Union.⁵⁷

Care of livestock and domestication of animals were as important to the agriculturalist as crops; consequently, the Agricultural Division devoted large segments of the *Report* to these two topics. Most of the material was good, sound advice, but, again, there were some offerings that bordered on fantasy. The prevailing philosophy, however, seemed to be that anything was worth trying, especially if these animals or practices had proved useful in other countries; possibly they could be adapted

^{55.} D.J. Browne, "Preparation for a Government Propagating Garden at Washington," 1858 Report, pp. 280-83; Thomas G. Clemson, "Preliminary Remarks," 1860 Report, pp. 15; Spencer Bonsall, "Tea," 1860 Report, pp. 446-67.

^{56.} D.J. Browne, "Wheat. The Production of New Varieties by Cross-Fecundation," 1855 Report, pp. 181-86, is representative of the many articles on wheat production.

^{57.} D.J. Browne, "Report on the Seeds and Cuttings Recently Obtained by the Patent Office," 1855 Report, p. x.

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to the United States through concerted efforts by agricultural groups, philanthropists, or other interested persons.

There were many good articles in the *Report* on the proper care of livestock, the history of various breeds, and the benefits derived from animals. Of specific interest were the items on dairy farming, sheep husbandry, horse training (origin and uses), veterinary medicine, breeding or advanced methodology, such as "green-soiling" of stock (feeding all stock in stables or yards). In reality, the more impractical schemes were a small part of the whole *Report*. Nevertheless, these ideas are interesting because they represent man's attempt to better utilize the land and improve his agriculture. In short, man is rarely satisfied with static conditions; if such can be improved, he is willing to try new practices no matter how ridiculous they might seem at first.

One of the first unusual plans of the Patent Office in the area of animal adaptation and domestication was the introduction of the alpaca, the "sheep of the Andes," into the United States. It was suggested in the 1844 Report that the mountains and highlands of Virginia, North and South Carolina,

Feed lot on a farm in Gregory County, South Dakota



and Georgia were conducive to the raising of these animals, which would add millions to the annual income of these states. The 1845 Report told of the governor of Vermont sending for a pair; associations in New York City and Bourbon County, Kentucky, also planned to obtain a few animals for experiment. The Report enthusiastically concluded that "we cannot doubt that our climate will be well adapted to them, and that they may also prove to us a source of national wealth." So Needless to say, these experiments during the 1840s failed, but the topic was reopened again around 1857 by Superintendent Browne who felt that the llama and alpaca might do well on the Great Plains, even though they had proved to be unadaptable to the climate and elevation of the Atlantic and Gulf states. Europe was also experimenting with the llama and alpaca at this time.

Another grandiose suggestion appeared in an article in the 1851 Report by S.F. Baird of the Smithsonian Institution. He suggested that the following might be used for "economical employment" in the less populous regions: reindeer, caribou, moose, elk, various types of deer, antelope, mountain goats, musk oxen, and buffalo. As they were all native to America, it was just a matter of training in order to render them useful. Baird claimed that initial experiments were satisfactory, but that there had been no chance for prolonged training to effectively pursue this objective. 62

Probably the most interesting of all the schemes of this nature was the importation of the camel, which received extensive treatment in the 1853 Report. Jefferson Davis, in 1851 while a senator from Mississippi, had introduced an amendment—which was rejected—to the military appropriations bill calling for the importation of fifty camels for experimental

^{58. &}quot;The Alpaca," 1844 Report, p. 400-405.

^{59. 1845} Report, p. 343.

^{60.} D.J. Browne, "The Llama and Alpaca-Their Geographical Distribution, Organization, Food, Habits, and Probable Adaptation to Certain Regions of the United States," 1857 Report, pp. 66-71.

^{61.} A reference to a London-based Society for Acclimatization of Animals in the 1861 Report, p. 327. This group was attempting to introduce the alpaca, llama, and Peruvian sheep into France.

^{62.} S.F. Baird, "On the Ruminating Animals of North America, and Their Susceptibility of Domestication," 1851 Report, pp. 104-28.

purposes by the War Department, During August 1852 renewed attempts were made to amend military appropriation bills for that same purpose, 63 and the Agricultural Division began lending its support. The matter was considered of national importance since it was necessary to have communication and transportation links with Oregon and California, meaning that an overland route would cross both "mountains and desert": moreover, the camel would be an excellent beast of burden in all "portions of the Western hemisphere where there are broad prairies and elevated plains nearly destitute of water," Camels could be obtained, it was reported, for about fifty dollars: however, the Patent Office was willing to concede that there were some difficulties connected with this operation. 64 An appropriation for \$30,000 for the purchase and importation of camels was attached to a military bill and passed on 3 March 1855. The money was to be expended under the direction of the War Department. 65 Interestingly enough, that department was then headed by the same Jefferson Davis who had introduced the original amendment.

In another area of animal domestication, considerable attention was given by the Agricultural Division to experiments by James B. Davis of Columbia, South Carolina, who in 1849 introduced the Kashmir goat into America with apparent success. Davis had done some crossbreeding with domestic American types, and the conclusion of the Agricultural Division was that the goats were adaptable to all areas of the United States, especially the hilly and mountainous regions. Davis also believed that success could be met with the introduction of the Asiatic buffalo, the Brahmin ox, and the Scinde and Malta goats, but that it would take considerable more effort. 66

^{63.} U.S., Congress, Senate, *Congressional Globe*, 31st Cong., 2d sess., 1850-51, 23, pp. 826-27; U.S., Congress, Senate, *Congressional Globe*, 32d Cong., 1st sess., 1851-52, 24, pt. 3:2208, 2430-31.

^{64. &}quot;Importation of Camels," 1853 Report, pp. 61-68. Most of the information in the article was taken from a manuscript by a General Harlan of Chester County, Pennsylvania, who apparently had spent nineteen years in the Middle East, as a mercenary; the information was corroborated by Caleb Lyon of New York, who also had spent some time in the Middle East and had had an opportunity to observe these animals at work.

^{65.} U.S., Statutes at Large, vol. 10, 169, p. 639.

^{66. 1853} Report, p. 20; 1855 Report, pp. 54-57; "Report on Asiatic Goats," 1857 Report, pp. 56-66.

Domestication of the elk was thought to have merit, as some persons were already experimenting with this animal for meat purposes. 67 Superintendent Browne also proposed introduction of the vak to the Great Plains. This animal could be especially useful to the Indians of this region as a new source of food. 68 Correspondence was included in the 1859 Report from S.F. Baird, who reiterated his earlier claims for the alpaca and Kashmir goats and also called for the domestication of the Rocky Mountain sheep and goats. ⁶⁹ Finally the 1860 Report had several pages on the merits of domesticating the buffalo, which had been suggested earlier by Baird in the 1851 Report. This topic was revived through the efforts of Eli Thayer of Massachusetts, chairman of the Committee on Public Lands. 70 who was probably more famous as the originator of the New England Emigrant Aid Society. Thayer, of course, would be concerned about livelihood in the West because he was encouraging easterners to move to Kansas in order for it to become a nonslave state. Crossing the buffalo with domestic cattle, it was thought, would provide hardy livestock for the Plains environment.

The above schemes are quite unusual, and for that reason a latter-day reader of the *Report*(s) may get the impression that the Patent Office was often literally involved in wild-goose chases. But that was far from the case. Most of the livestock and animal portion of the *Report* was devoted to husbandry of principal breeds. There were some excellent articles on the more plausible aspects of introduction and adaptation of new animals; for example, "Select Breeds of Cattle and their Adaptation to the United States" by Francis Rotch.⁷¹ This work treated the history of experimentation with cattle breeding. In retrospect, the unusual and often impractical schemes were examples of man's attempt to more effectively improve his farming methods. He was not adverse to trying something new if it might proveuseful and profitable in the long

^{67.} D.J. Browne, "Domestication of the Elk," 1858 Report, pp. 235-39.

^{68. &}quot;Proposed Introduction of the Yak-Ox from Tartary to the Great Plains of the West," 1858 Report, pp. 239-41.

^{69. 1859} Report, p. 541.

^{70.} Thomas Clemson, "Preliminary Remarks," 1860 Report, pp. 18-20.

^{71. 1861} Report, pp. 427-69.

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run, and the Agricultural Division of the Patent Office reflected that philosophy in compiling its reports and articles.

There is little question that the 1837-1861 period was an expansive era in American agriculture; surpluses were being produced and new lands settled, all of which offered opportunities for experimentation with new crops and animals. The Agricultural Report reflects the dynamic nature of these processes, and in its own way was trying to lend guidance and assistance to the overall growth and westward movement. It was fortunate for the farmer that the Commissioners of Patents early realized a responsibility to agriculture as well as arts and manufactures. Out of this meager beginning came, first, the Agricultural Division of the Patent Office, and, later, the Department of Agriculture. It was only proper at the time when over half of the American population was agriculturally oriented that some area of governmental administration should represent this large group and promote its interests.

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